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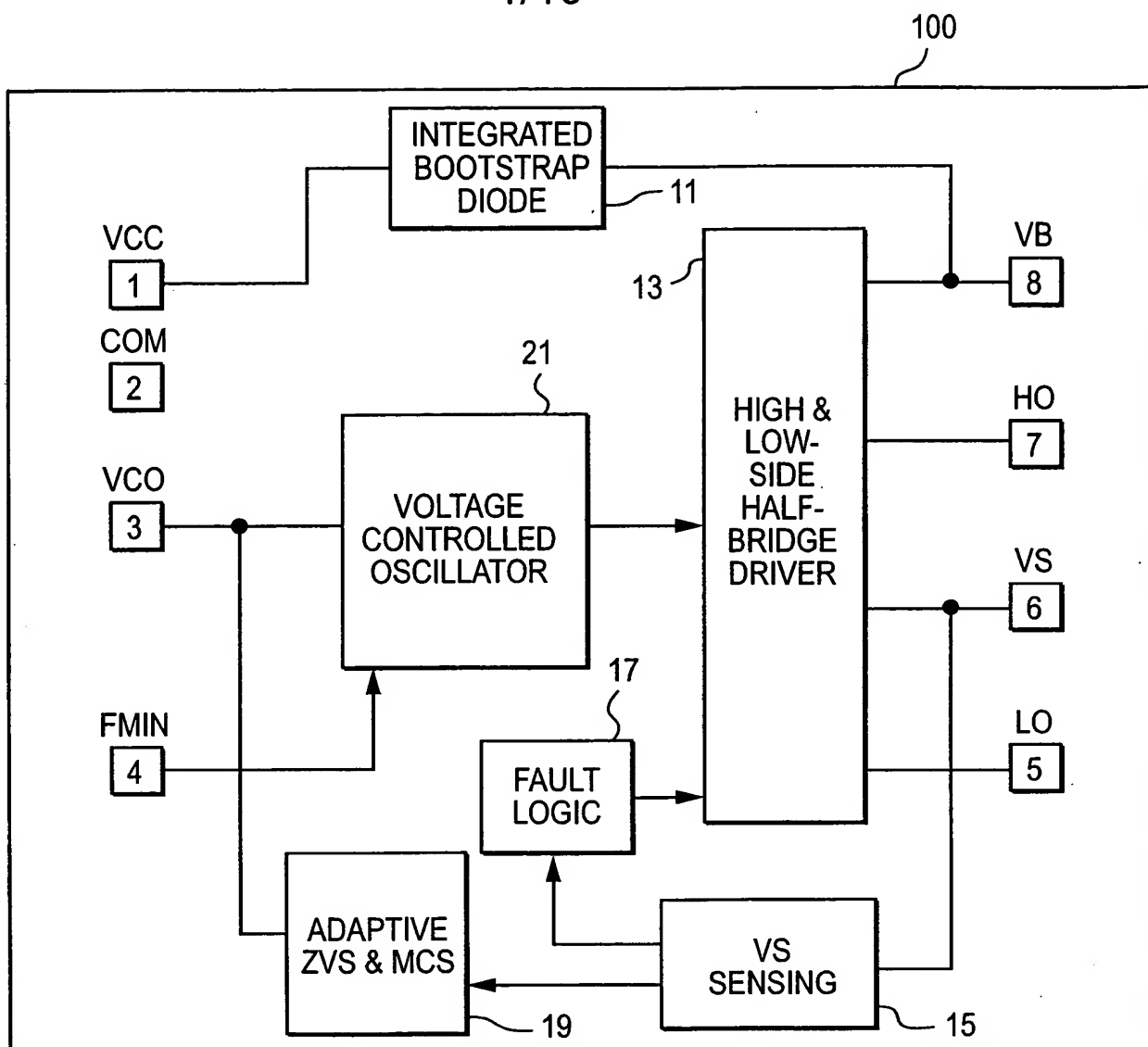


FIG. 1

PIN ASSIGNMENTS		PIN #	SYMBOL	DESCRIPTION
VCC	1	8	VB	SUPPLY VOLTAGE
COM	2	7	HO	IC POWER & SIGNAL GROUND
VCO	3	6	VS	VOLTAGE CONTROLLED OSCILLATOR INPUT
FMIN	4	5	LO	MINIMUM FREQUENCY SETTING
				LOW-SIDE GATE DRIVER OUTPUT
				HIGH-SIDE FLOATING RETURN
				HIGH-SIDE GATE DRIVER OUTPUT
				HIGH-SIDE GATE DRIVER FLOATING SUPPLY

FIG. 2

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200

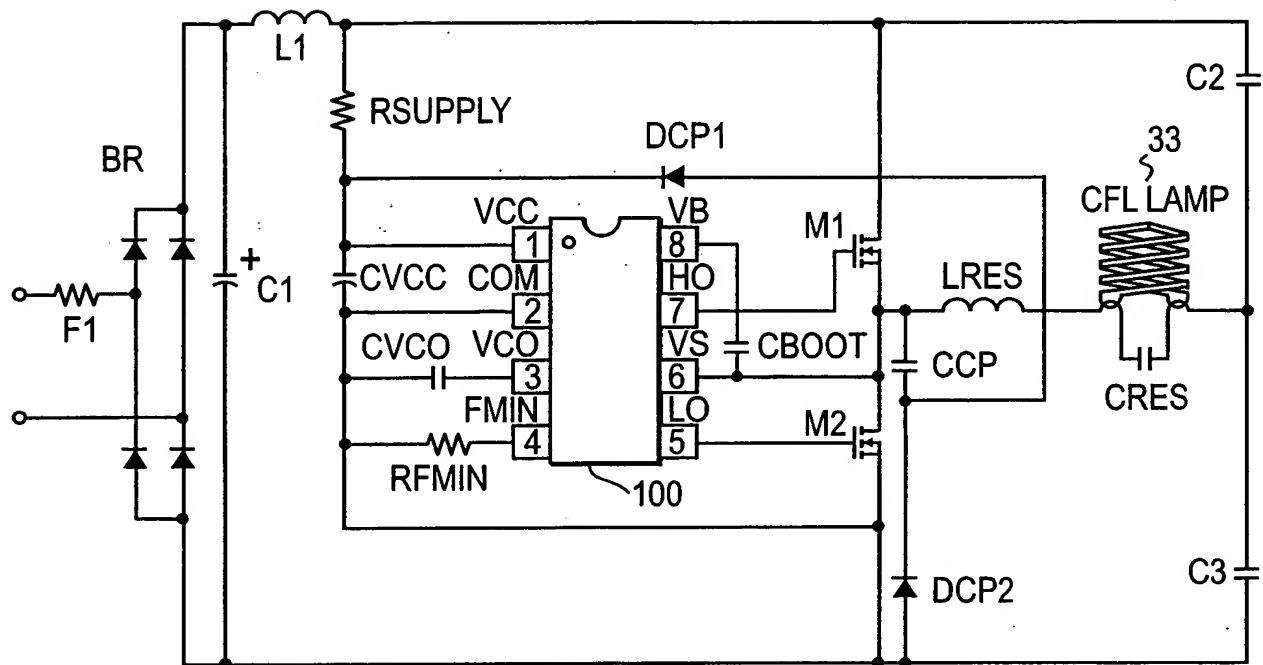


FIG. 3

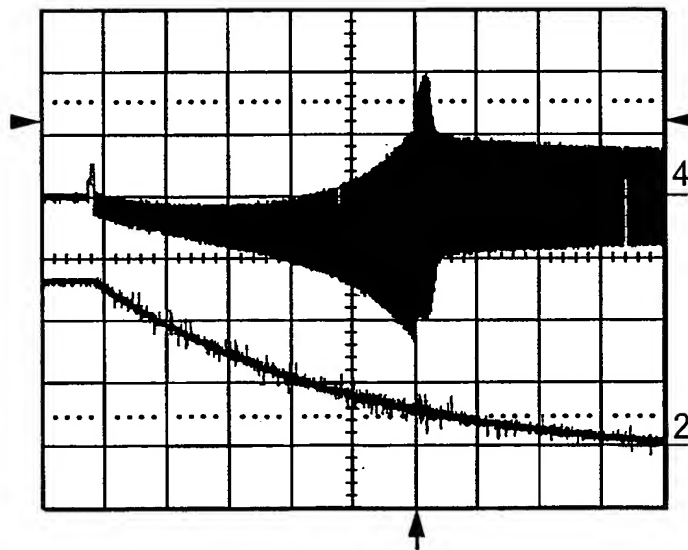


FIG. 4

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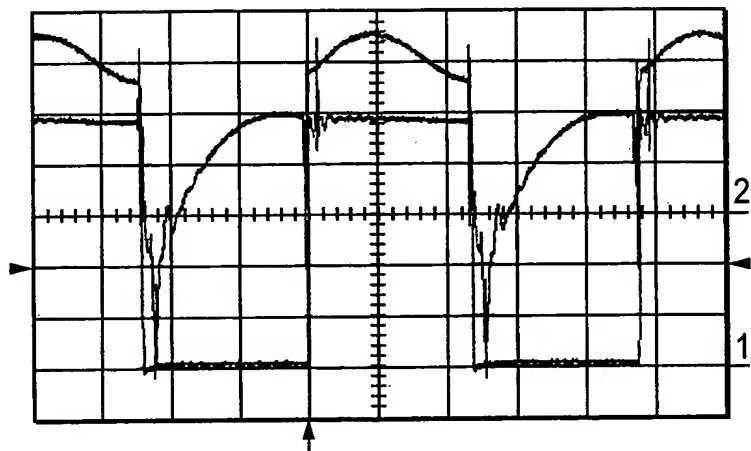


FIG. 5

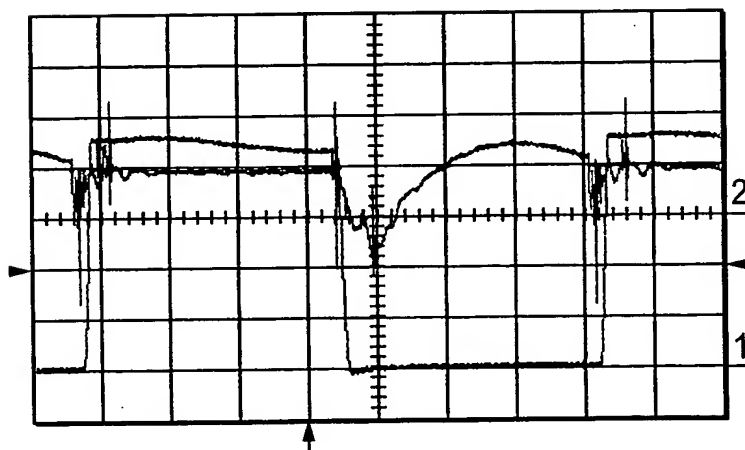
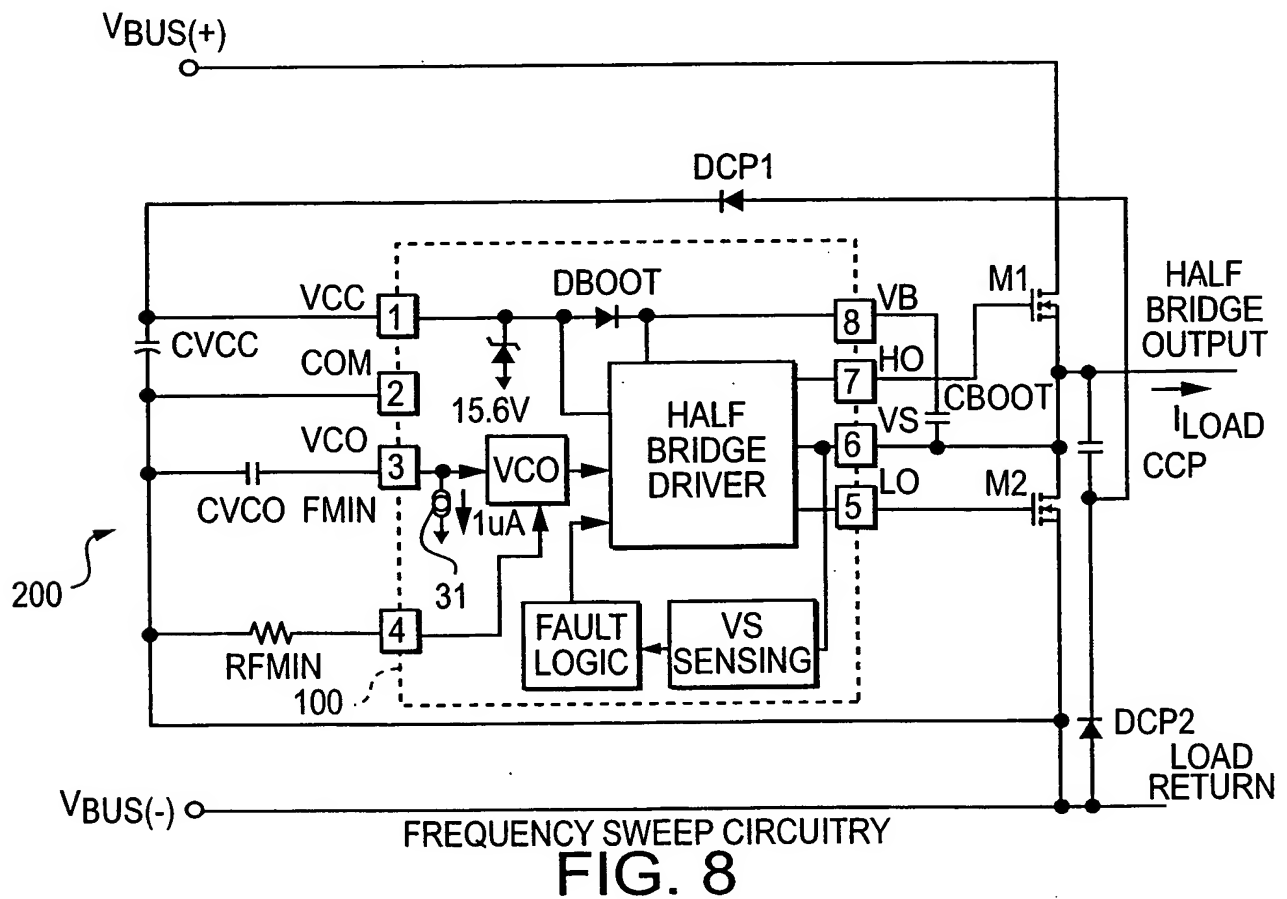
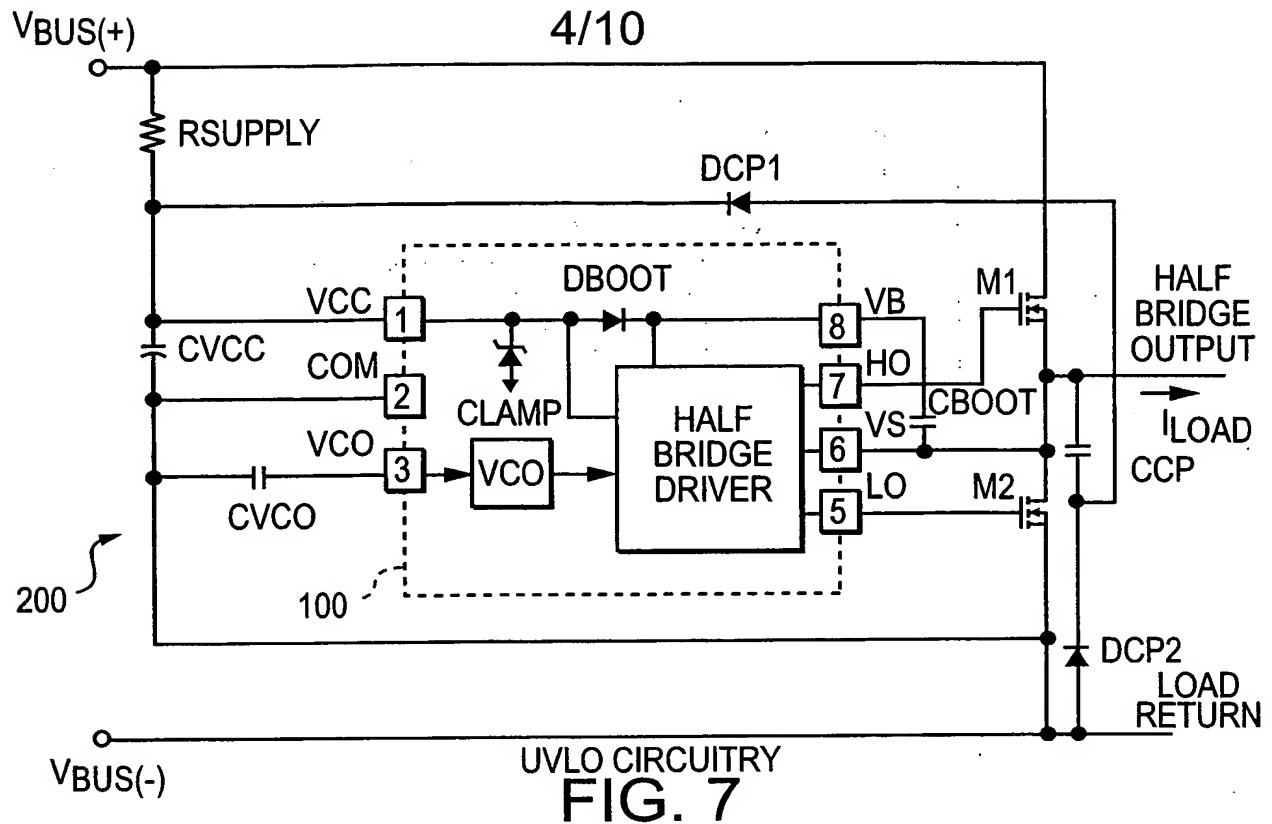


FIG. 6





# ADAPTIVE ZMCS CIRCUITRY

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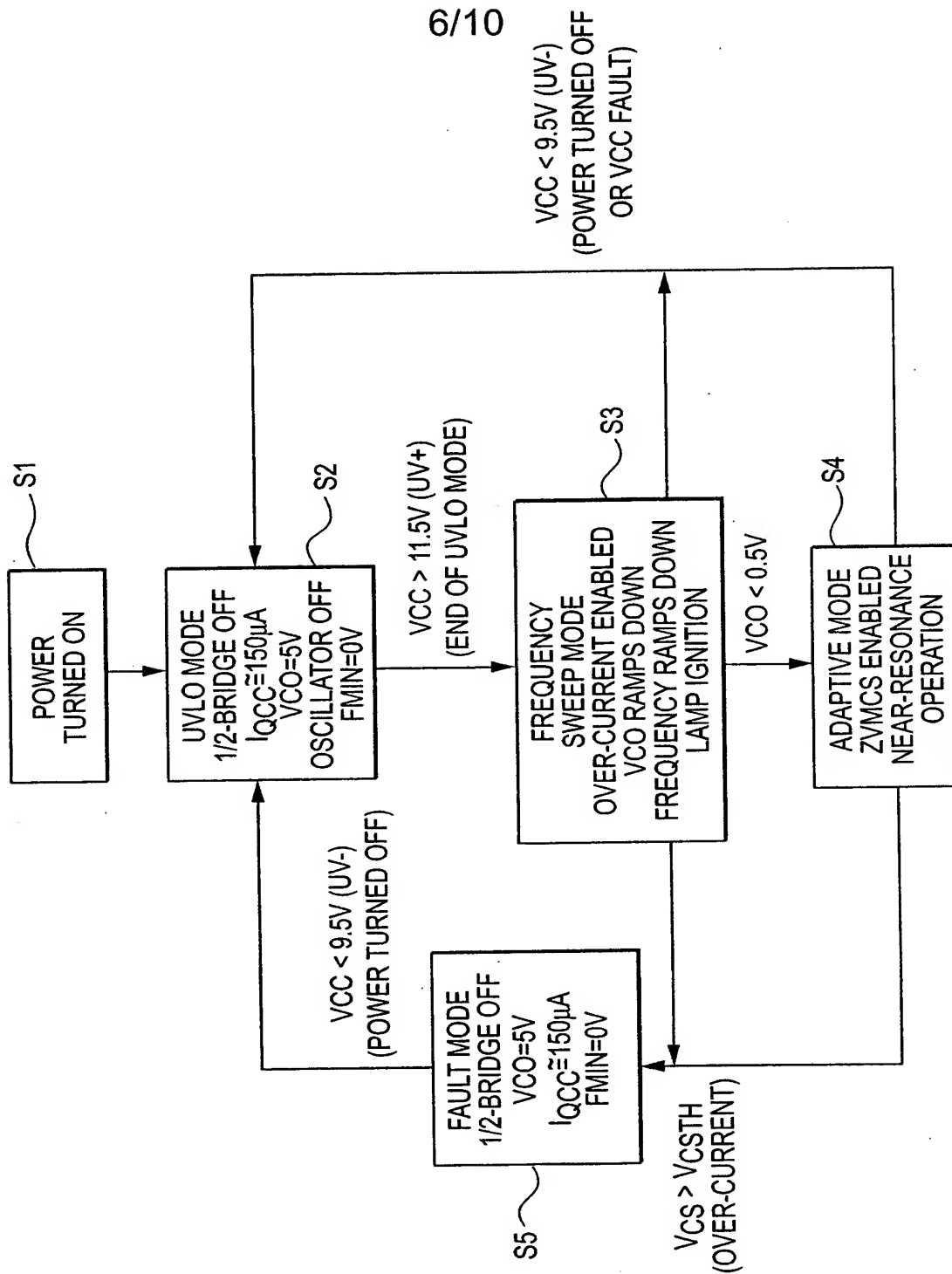


FIG. 10

TABLE 1

RECOMMENDED OPERATING CONDITIONS  
FOR PROPER OPERATION THE DEVICE SHOULD BE USED WITHIN THE RECOMMENDED CONDITIONS.

SYMBOL	DEFINITION	MIN	MAX	UNITS
V <sub>BS</sub>	HIGH-SIDE FLOATING SUPPLY VOLTAGE	V <sub>CC</sub> - 0.7	V <sub>CLAMP</sub>	V
V <sub>S</sub>	STEADY STATE HIGH-SIDE FLOATING SUPPLY OFFSET VOLTAGE	-1	600	
V <sub>CC</sub>	SUPPLY VOLTAGE	V <sub>CCUV</sub> +	V <sub>CLAMP</sub>	
I <sub>CC</sub>	SUPPLY CURRENT	NOTE 2	10	mA
R <sub>FMIN</sub>	MINIMUM FREQUENCY SETTING RESISTANCE	10	100	kΩ
V <sub>VCO</sub>	VCO PIN VOLTAGE	0	5	V
T <sub>J</sub>	JUNCTION TEMPERATURE	-25	125	°C

NOTE 2: ENOUGH CURRENT SHOULD BE SUPPLIED INTO THE VCC PIN TO KEEP THE INTERNAL 15.6V ZENER CLAMP DIODE ON THIS PIN REGULATING ITS VOLTAGE, V<sub>CLAMP</sub>.

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TABLE 2

ABSOLUTE MAXIMUM RATINGS  
ABSOLUTE MAXIMUM RATINGS INDICATE SUSTAINED LIMITS BEYOND WHICH DAMAGE TO THE DEVICE MAY OCCUR. ALL VOLTAGE PARAMETERS ARE ABSOLUTE VOLTAGES REFERENCED TO COM. ALL CURRENTS ARE DEFINED POSITIVE INTO ANY LEAD. THE THERMAL RESISTANCE AND POWER DISSIPATION RATINGS ARE MEASURED UNDER BOARD MOUNTED AND STILL AIR CONDITIONS.

SYMBOL	DEFINITION	MIN	MAX	UNITS
$V_B$	HIGH-SIDE FLOATING SUPPLY VOLTAGE	-0.3	625	V
$V_S$	HIGH-SIDE FLOATING SUPPLY OFFSET VOLTAGE	$V_B - 25$	$V_B + 0.3$	
$V_{HO}$	HIGH-SIDE FLOATING OUTPUT VOLTAGE	$V_S - 0.3$	$V_B + 0.3$	
$V_{LO}$	LOW-SIDE OUTPUT VOLTAGE	-0.3	$V_{CC} + 0.3$	
$I_{OMAX}$	MAXIMUM ALLOWABLE OUTPUT CURRENT (HO, LO) DUE TO EXTERNAL POWER TRANSISTOR MILLER EFFECT	-500	500	mA
$V_{VCO}$	VOLTAGE CONTROLLED OSCILLATOR INPUT VOLTAGE	-0.3	$V_{CC} + 0.3$	V
$I_{CC}$	SUPPLY CURRENT (NOTE 1)	-20	20	mA
$dV/dt$	ALLOWABLE OFFSET VOLTAGE SLEW RATE	-50	50	V/ns
$P_D$	PACKAGE POWER DISSIPATION @ $T_A \leq +25^\circ\text{C}$ $P_D = (T_{JMAX} - T_A)/R_{\theta JA}$	---	1	W
		---	0.625	
$R_{\theta JA}$	THERMAL RESISTANCE, JUNCTION TO AMBIENT (8-PIN SOIC)	---	125	$^\circ\text{C/W}$
		---	200	
$T_J$	JUNCTION TEMPERATURE	-55	150	$^\circ\text{C}$
$T_S$	STORAGE TEMPERATURE	-55	150	
$T_L$	LEAD TEMPERATURE (SOLDERING, 10 SECONDS)	---	300	

NOTE 1: THIS IC CONTAINS A ZENER CLAMP STRUCTURE BETWEEN THE CHIP  $V_{CC}$  AND COM, WHICH HAS A NOMINAL BREAKDOWN VOLTAGE OF 15.6V. PLEASE NOTE THAT THIS SUPPLY PIN SHOULD NOT BE DRIVEN BY A DC, LOW IMPEDANCE POWER SOURCE GREATER THAN THE VCLAMP SPECIFIED IN THE ELECTRICAL CHARACTERISTICS SECTION.



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TABLE 3A

TABLE 3B

## TABLE 3

## TABLE 3A

ELECTRICAL CHARACTERISTICS  
 $V_{CC} = V_{BS} = V_{BIAS} = 14V \pm 0.25$ ,  $C_{LO} = C_{HO} = 1000 \text{ pF}$ ,  $T_A = 25^\circ\text{C}$  UNLESS OTHERWISE SPECIFIED.

SYMBOL	DEFINITION	MIN	TYPE	MAX	UNITS	TEST CONDITIONS
SUPPLY CHARACTERISTICS						
$V_{CCUV+}$	$V_{CC}$ SUPPLY UNDERVOLTAGE POSITIVE GOING THRESHOLD	10.5	11.5	12.5	V	$V_{CC}$ RISING FROM 0V
$V_{CCUV-}$	$V_{CC}$ SUPPLY UNDERVOLTAGE NEGATIVE GOING THRESHOLD	8.5	9.5	10.5		$V_{CC}$ FALLING FROM 14V
$V_{UVHYS}$	$V_{CC}$ SUPPLY UNDERVOLTAGE LOCKOUT HYSTERESIS	1.5	2.0	3.0		
$I_{QCCUV}$	UVLO MODE QUIESCENT CURRENT	50	120	200	$\mu\text{A}$	$V_{CC}=11V$
$I_{QCCFLT}$	FAULT-MODE QUIESCENT CURRENT	---	180	---		
$I_{QCC}$	QUIESCENT $V_{CC}$ SUPPLY CURRENT	---	1.8	---	mA	$V_{CC}=14V$
$I_{CC50k}$	$V_{CC}$ SUPPLY CURRENT, $f = 50\text{kHz}$	---	1.8	---		
$V_{CLAMP}$	$V_{CC}$ ZENER CLAMP VOLTAGE	14.5	15.6	16.5	V	$I_{CC}=10\text{mA}$
FLOATING SUPPLY CHARACTERISTICS						
$I_{QBS0}$	QUIESCENT $V_{BS}$ SUPPLY CURRENT	-1	0	5	$\mu\text{A}$	$V_{HO} = V_S$
$I_{QBS1}$	QUIESCENT $V_{BS}$ SUPPLY CURRENT	---	28	---		$V_{HO} = V_B$
$V_{BSMIN}$	MINIMUM REQUIRED $V_{BS}$ VOLTAGE FOR PROPER HO FUNCTIONALITY	---	2.5	---	V	
$I_{ILK}$	OFFSET SUPPLY LEAKAGE CURRENT	---	---	50	$\mu\text{A}$	$V_B = V_S 600V$

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OSCILLATOR I/O CHARACTERISTICS						
FVCO(MIN)	MINIMUM OSCILLATOR FREQUENCY	---	30	---	kHz	VCO=0V, RFMIN=39K
FVCO(MAX)	MAXIMUM OSCILLATOR FREQUENCY	---	110	---	---	VCO=5V, RFMIN=39K
D	OSCILLATOR DUTY CYCLE	---	50	---	%	
TDLO	LO OUTPUT DEADTIME	---	1.2	---	μS	RFMIN=39K
TDHO	HO OUTPUT DEADTIME	---	1.2	---	---	RFMIN=39K
IVCOPH	PREHEAT MODE & FREQUENCY SWEEP MODE VCO PIN DISCHARGE CURRENT	---	1.0	---	μA	CVO<VCC
IVCOADPT	ADAPTIVE MODE VCO PIN DISCHARGE CURRENT	---	16.0	---	---	
VVCOFLT	FAULT MODE & UVLO MODE VCO PIN VOLTAGE	---	5	---	V	
GATE DRIVER OUTPUT CHARACTERISTICS						
VOL	LOW LEVEL OUTPUT VOLTAGE (HO OR LO)	---	---	100	mV	
VHL	HIGH LEVEL OUTPUT VOLTAGE (HO OR LO)	---	---	100	---	
TRISE	TURN ON RISE TIME	---	---	150	NS	
TFALL	TURN OFF FALL TIME	---	---	100	---	
PROTECTION CHARACTERISTICS						
VCSTH	PEAK OVER CURRENT LATCH THRESHOLD VOLTAGE	---	5	---	V	
MINIMUM FREQUENCY SETTING CHARACTERISTICS						
VFMIN	IFMIN PIN VOLTAGE DURING NORMAL OPERATION	---	5.1	---	V	
VFMINFLT	IFMIN PIN VOLTAGE DURING FAULT MODE	---	0.0	---	V	VCS > VCSTH

TABLE 3B